DOCUMENT RESUME

ED 176 085 CE 022 635

AUTHOR Clark, Kim B.; Summers, Lawrence H.
TITLE The Demographic Composition of Cyclical Variations in Employment.
INSTITUTION Department of Labor, Washington, D.C.
PUB DATE Jan 79
NOTE 33p.
AVAILABLE FROM National Technical Information Service, Springfield, VA 22161

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Business Cycles; *Demography; Economic Factors; *Employment; *Employment Patterns; Employment Trends; Labor Force Nonparticipants; *Labor Market; Models; Participant Characteristics; *Unemployment; Work Experience; Youth Employment

ABSTRACT

This paper analyzes the demographic patterns of cyclical swings in the labor market by decomposing movement in employment into changes in unemployment and participation. The focus is on the interrelations among participation, employment and unemployment, with particular emphasis on the participation rate as a prime determinant of the labor market experience of various demographic groups. The first section of the paper briefly reviews the evidence indicating the importance of participation fluctuations. An empirical model is described and several variants are discussed. The second section discusses empirical results for various groups. Differences in labor market experience by age, sex, race, and marital status are considered. From the findings, the importance of the participation rate in affecting the cyclical behavior of both employment and unemployment is concluded. Another finding is that young workers bear a disproportionate share of cyclical fluctuations. The third section analyzes the impact of aggregate demand policy on high unemployment demographic groups. It is concluded that failure to consider participation has led to undue pessimism about the effects of aggregate demand policy on high unemployment groups. The fourth and final sections of the paper summarize the conclusions and discuss some of their implications. (JH)

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The Demographic Composition of Cyclical Variations in Employment

Technical Analysis Paper No. 61

U.S. Department of Labor
Ray Marshall, Secretary

Office of the Assistant Secretary For
Policy, Evaluation and Research
Arnold Packer, Assistant Secretary

January, 1979

ED176085

This report was prepared by Kim B. Clark and Lawrence H. Summers of Harvard University under contract/purchase order No. B-9-M-8-1037 from the Office of the Assistant Secretary for Policy, Evaluation and Research, U.S. Department of Labor. Since contractors conducting research and development projects under Government sponsorship are encouraged to express their own judgment freely, this report does not necessarily represent the official opinion or policy of the Labor Department. The authors are solely responsible for the contents of this report.

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Abstract

This paper examines demographic differences in patterns of employment variation over the business cycle. For various age-race-sex-marital status groups, movements in employment are decomposed into changes in unemployment and participation. Three primary conclusions emerge. First, both participation and unemployment must be considered in any analysis of cyclical changes in the labor market. The unemployment rate is fundamentally misleading because it can rise either through reduced employment or increased job seeking activity. Second, a disproportionate share of the burden of cyclical employment variation is borne by the young. For example, teenagers comprise 9 percent of the population but experience 25 percent of cyclical employment variations. Third, failure to consider participation has led to undue pessimism about the effects of aggregate demand policy on high unemployment groups. If participation did not surge, reduction in overall unemployment to its 1969 level would reduce the unemployment of almost all demographic groups to very low levels. It is only because of increased participation that demand policy appears ineffective. In fact, increased participation is an additional advantage of economic stimulus.

The cyclical behavior of employment and unemployment is a dominant feature of labor markets. Cyclical fluctuations in economic activity affect the labor market experience of all demographic groups. While the unemployment rates of different demographic groups move together, the levels about which they fluctuate and the amplitude of cyclical fluctuations differ greatly. These differences suggest that understanding the cyclical character of labor markets requires explicit examination of the experience of individual groups.[1] Moreover, an assessment of the welfare implications of alternative policies requires consideration of the incidence of costs and benefits.

The cyclical sensitivity of unemployment is a reflection of two quite different phenomena. Unemployment can increase either because fewer jobs are available or because more workers decide to seek the available jobs. These two sources of unemployment have different welfare implications. While the former is almost certainly indicative of a worsening labor market performance, the latter may reflect an improvement in conditions. Focus only on unemployment rates is thus very likely to be misleading. Recent experience illustrates the point. During 1977 the unemployment rate fell by about one percentage point. If participation had remained constant, the large gains in employment during that year would have caused more than a two point decline in the unemployment rate. Similarly, a constant participation rate over the last two years would have led to an unemployment rate below five percent today.

The ambiguous character of fluctuations in unemployment suggests that analysis of cyclical behavior will be improved by simultaneous examination of movements in employment and participation. In this paper we analyze the demographic patterns of cyclical swings in the labor market by decomposing

movements in employment into changes in unemployment and participation. The paper focuses on the interrelations among participation, employment and unemployment, with particular emphasis on the participation rate as a prime determinant of the labor market experience of various demographic groups.

The first section briefly reviews the evidence indicating the importance of participation fluctuations. The empirical model is described and several variants are discussed. The second section of the paper discusses the empirical results for various groups. Differences in labor market experience by age, sex, race, and marital status are considered. The results confirm the importance of the participation rate in affecting the cyclical behavior of both employment and unemployment. A key finding is that young workers bear a disproportionate share of cyclical fluctuations. For example, teenagers, who comprise only 9% of the population, account for more than a quarter of employment fluctuations. The third section of the paper analyzes in greater detail the impact of aggregate demand policy on high unemployment demographic groups. It has frequently been held that these groups have a structural problem upon which expansionary policy can have only a small impact. We show that this conclusion results from ignoring the participation rate. These groups have high unemployment rates in times of very strong macroeconomic performance only because of the surge in participation which accompanies increased employment opportunities. Without participation fluctuations, expansionary aggregate demand could reduce the unemployment rate of almost every demographic group to a very low level. The fourth and final section of the paper summarizes our conclusions and discusses some of their implications.

Section I: Labor Force Participation and the Cyclical Behavior of Labor Markets

The rate of labor force participation is a fundamental measure of labor market activity. As a measure of the supply of labor, participation has been widely studied using aggregate time series and cross-section data. Since Mincer's well-known studies (Mincer (1962), (1966)), it has been widely recognized that participation fluctuations are of great importance in understanding employment fluctuations, especially among women. Within the last 10 years the availability of large sets of data on individuals has shifted attention from behavior in the aggregate, to the structural determinants (i.e., education and fertility) of individual participation.[2] Since Bowen and Finnegan's massive study, the time series behavior of the participation rate has received relatively little attention. The few studies which have been performed (e.g., Wachter (1972), (1977)) have focused on "classical" macroeconomic models in which there is no direct impact of aggregate demand on participation. However, there is substantial reason to believe that many nonparticipants are functionally no different from the unemployed. If this is the case, cyclical fluctuations in the participation rate may be as important as movements in the rate of unemployment in assessing labor market performance. We begin by briefly reviewing the evidence suggesting that the availability of jobs has a potentially large impact on the participation rate.

Unemployment and Nonparticipation

It is important at the outset to recognize the highly arbitrary character of the official definition of unemployment. In order to be counted as unemployed in the Current Population Survey (CPS), a person must profess either to be on layoff or to have searched for work during the last four weeks and to be available for work in the survey week. The definition of search used

in the survey is quite elastic. Speaking with friends or reading want ads constitutesemployment search under the CPS definition. The problem is complicated by the fact that individuals do not report on their own labor force status. Typically, one member of a household reports on the labor market status of all the members. This procedure may produce biases in estimates of the unemployment rate (Freeman and Medoff (1978)).[3]

Perhaps the most powerful evidence of the arbitrary character of the CPS comes from a comparison of the reporting of various rotation groups. Persons in the CPS remain in the sample for four months, are then omitted for eight and return for four additional months. As Bailar (1975) has shown, the reporting of different rotation groups is very different. The unemployment rate varies by as much as ten percent between those reporting to the interviewer for the first time and those reporting for the final time. There is no reason why these differences should exist since the samples are drawn in the same way for all rotation groups. Most of the differences lie in the reporting of unemployment versus nonparticipation. Those who have been interviewed more than once are more likely to indicate that they did not search for work during the preceding month. This has been attributed to growing comfort with the interviewer. In any event it suggests that official definitions may be quite arbitrary.

Since 1967 the Current Population Survey has inquired extensively about the status of those not counted in the labor force. This group is asked both the reason for leaving the labor force, and the reason for not looking for work during the preceding month. Those who respond to the second

question by saying that they are not looking because they do not think they can find a job, are counted as discouraged workers. The number of such workers varies counter-cyclically. In 1976,when the unemployment rate was 7.7 percent, there were 910,000 discouraged workers, whereas there were only 574,000 discouraged workers in 1969 when the unemployment rate was 3.5 percent. It would seem clear that this group of workers is just as indicative of labor market failure as those counted as unemployed.

Beyond the discouraged worker contingent are many others outside the labor force, who might well be thought of as hidden unemployed. Over two million people in 1976 reported themselves to have left their last job for economic reasons, within the previous year. A large proportion of this group plan to return to work within a year. In addition, during 1976 close to 5 million workers indicated that they wanted a job now even though they were out of the labor force. While many of them gave reasons other than discouragement (e.g., keeping house, family responsibilities) for not seeking work it is at least possible that these commitments would not have been entered into had they been able to find employment.

The view that the unemployment/nonparticipation distinction is very weak, is strongly supported by analysis of labor market flows. Clark and Summers (1978) examine the BLS Gross Changes data in detail, and demonstrate the high frequency of transitions in and out of the labor force. The results show that close to half of the unemployed end their spells by withdrawing from the labor force. Of this group, about 90 percent remain outside of the labor force for less than a year before returning. This group, with recent work experience, constitutesthe bulk of the re-entrant unemployed. These

findings indicate that many people outside the labor force remain closely attached to employment opportunities and are likely to return to the labor force very quickly. In many respects, their behavior may be almost indistinguishable from those officially counted as unemployed. Likewise, many of those who remain unemployed may in fact be searching very casually and may behave in a way not very different from the majority of those who are out of the labor force. This inference is supported by survey evidence indicating that many of the unemployed engage in only a small amount of job search activity.[4]

Participation and Employment Fluctuations

The weakness of the unemployment/nonparticipation distinction suggests that focusing on fluctuations in employment rather than unemployment may be more useful in assessing cyclical conditions.[5] Employment fluctuations may be decomposed into changes in the unemployment rate and the participation rate. The employment ratio, defined as the proportion of the population which is employed, is equal to the product of the participation rate and the employment rate (one minus the unemployment rate). These three measures provide a complete summary of the degree of labor market activity of the population. The relationship between them can be seen by making use of the following identity:

$$\left(\frac{E}{N}\right)_i = \left(\frac{E}{L}\right)_i \left(\frac{L}{N}\right)_i \qquad (1)$$

where E is employment, N is population, L is labor force, and i indexes demographic groups. Taking logs and differentiating yields the basic decomposition:

$$d\ln\left(\frac{E}{N}\right)_i = d\ln\left(\frac{E}{L}\right)_i + d\ln\left(\frac{L}{N}\right)_i \qquad (2)$$

Since persons in the labor force are either employed or unemployed it is clear that:

$$d\ln\left(\frac{E}{N}\right)_i = d\ln\left(1-UR\right)_i + d\ln\left(\frac{L}{N}\right)_i \qquad (3)$$

where UR is the unemployment rate.[6]

The results of this decomposition, presented in Table 1, clearly indicate the importance of fluctuations in participation during the past few years. For women, changes in participation are generally much larger than changes in the rate of unemployment. On average, variation in the rate of participation accounts for 70 percent of the variation in the female employment ratio. While a much smaller variation in participation has been observed in the total population, the fluctuations are still substantial relative to movements in the unemployment rate. It is clear that focusing only on the unemployment rate gives a very misleading picture of labor market conditions. For example, substantial improvement in labor market performance between 1976 and 1977 shows up largely as increases in participation rather than declines in the unemployment rate. Had the participation rate remained constant during 1977, unemployment would have fallen by almost three times as much. Table 1 thus underscores the need to examine the interrelations among employment, unemployment and participation in analyzing cyclical fluctuations in labor markets. Below our method of doing this is outlined.

The Empirical Model

For each demographic group we postulate that unemployment and participation rates are functions of aggregate demand and time. The time trends are included to reflect the impact of slowly changing social factors, and other gradually moving variables omitted from the equation. The basic equations to be estimated are:

Table 1

Decomposition of Changes in the Employment Ratio

(numbers are in percent)

Total Population Year	change in log of employment ratio (1)	change in log of participation rate (2)	change in log of employment rate (3)
1972-73	1.48	0.69	0.78
1973-74	-0.02	0.78	-0.80
1974-75	-3.14	0.04	-3.10
1975-76	1.43	0.53	0.85
1976-77	2.06	1.34	0.72
Women (16 and over)			
Year			
1972-73	2.60	1.91	0.69
1973-74	1.26	2.06	-0.81
1974-75	-1.33	1.48	-2.81
1975-76	2.86	2.11	0.75
1976-77	3.36	3.15	0.22

Source: BLS Employment and Earnings.

$$\ln(PR)_{it} = \beta_o + \sum_{k=0}^{n} \delta_k \; UP_{t-k} + \beta_2 T + \beta_3 T67 + v_{it} \qquad (4)$$

$$\ln(1-UR)_{it} = \alpha_o + \sum_{k=0}^{n} \lambda_k \; UP_{t-k} + \alpha_2 T + \alpha_3 T67 + u_{it} \qquad (5)$$

where UP is the unemployment rate of men between the ages of 35 and 44, T is the time trend, T67 is a second time trend which begins in 1967, and i indexes demographic groups.

Equations like (4) are traditional in analyses of labor force participation. They have provided the basis for estimates of "hidden unemployment," (Tella, (1965), Dernberg and Strand (1966)) and estimates of the full employment potential labor force (Perry (1978)). The unemployment rate of middle-aged (ages 35-44) males is used as a measure of aggregate demand. It is expected to influence the level of participation since the costs of search are affected by job availability. Moreover, apart from any changes in the real wage, the quality of available jobs varies with aggregate demand. The broken time trend beginning in 1967 (T67) is intended to allow for recent changes in secular trends. While the choice of T67 is somewhat arbitrary, the results reported below are very insensitive to its omission or to its replacement with trends beginning earlier or later.

Equations like (5) have not been extensively used in studying group unemployment rates. Feldstein (1973) and Feldstein and Wright (1976) have estimated similar relations, in order to study the potential of aggregate demand to reduce unemployment rates. Equation (5) can be justified in much the same way as the participation equations. Aggregate demand will have different effects on the unemployment rates of different groups, because of employers' rules in laying off workers, and because of quit patterns. Certain groups are more prone to

be laid off, others are more prone to leave jobs and so their unemployment experience is likely to respond quite differently to aggregate demand.

The equations to be estimated are not designed to provide the best or most detailed explanation of the participation (unemployment) rate of each group. Our purpose is to estimate a common model for each group which captures the response of participation (unemployment) to cyclical fluctuations in aggregate demand. Thus, some potential explanatory variables, such as real wages and inflation, have been excluded precisely because of their cyclical variation. That is, our equation is intended as a reduced form for the individual cyclical effects. Other variables have been omitted because they are essentially orthogonal to the variables included. We have in work available on request reestimated the equations reported here including variables reflecting demographic factors, inflationary expectations, and household wealth and liquidity. While these variables are sometimes significant, their inclusion has little impact on the estimated cyclical effects.

The interpretation of the coefficients in equations (4) and (5) is quite straightforward. For example, the cyclical responsiveness of the participation rate of the i^{th} group may be measured by:

$$\gamma^{i}_{PR} = -\sum_{k=0}^{n} \delta_k \qquad (6)$$

A value of $\gamma^{i}_{PR} = 1.0$ indicates that a 1 percent increase in aggregate demand (e.g., UP declines from point .06 to .05) produces a 1 percent increase in the participation rate of the i^{th} group (e.g., .430 to .434).

Equations (4) and (5) have been estimated using quarterly data for the period 1950-1976 for various demographic groups. The coefficients on lagged unemployment have been constrained to follow a first order polynomial constrained at the far end to pass through the origin, with a

length of eight quarters.[7] The identity (1) ensures that the relationship between the employment ratio and aggregate demand and time is given by:

$$\ln(EN)_{it} = \beta_o + \alpha_o + \sum_{k=0}^{n} (\delta_k + \lambda_k)\, UP_{t-k} + (\beta_2 + \alpha_2)T + (\beta_3 + \alpha_3)\, T67 + e_{it} \qquad (7)$$

It follows immediately that the equations presented here can be used to decompose the cyclical movements of the employment ratio into its unemployment and participation components since:

$$\gamma^i_{EN} = \gamma^i_{PR} + \gamma^i_{UR} \qquad (8)$$

We have estimated equations (4) and (5) using a maximum likelihood technique to correct for serial correlation. The change in the employment ratio arising from movements in the unemployment rate and the rate of participation is calculated using the identity (8).[8] Its approximate standard error is found by assuming that there is no covariance between γ^i_{PR} and γ^i_{UR} The regression equations for various age-sex groups are reported in the Appendix. In the next section the estimates of cyclical responsiveness are analyzed.

Section II: Demographic Demand Sensitivities

Table 2 presents estimates of the elasticity of cyclical response of employment, unemployment and participation for several demographic groups.[9] Beneath the estimates in parentheses are the estimated standard errors. As noted above, the numbers in column 1, which give the cyclical responsiveness of employment, are the sum of the estimates of the responsiveness of participation and unemployment (i.e., the employment rate) found in columns 2 and 3.

A clear implication of the results is that teenagers are particularly sensitive to cyclical developments. The estimates imply that a decline in the prime age male unemployment rate from six to five percent will produce a 4.5 percent increase in the proportion of male teenagers employed. Over 35 percent of this change comes from movements in participation. Among adult males 25-64, participation is very acyclical, with an elasticity close to zero. The employment rate, however, has an elasticity close to unity, so that on average a 1 percent increase in aggregate demand leads to a 1 percent increase in the employment of this group. Among elderly men over 65, the employment rate elasticity is 1.02, close to that for other adult groups. However, for this group participation is almost as responsive as that of teenagers. The net effect is an employment ratio elasticity of 2.70, suggesting that older men are among the prime beneficiaries of an expanding economy. This no doubt reflects the tendency of firms to induce early retirements in times of business cycle slack.

The results for women underscore the importance of examining participation in the context of changes in employment and unemployment. As in the case of men, female teenagers are very sensitive to movements in aggregate demand. We estimate that a 1 point decline in the prime age male unemployment rate will lead to a 2.5 percent increase in the participation rate of very young women. Combined with a large drop in unemployment, the employment ratio of this group is consequently increased by over 4 percent for each percentage point change in the prime age male unemployment rate. Similarly large gains in employment are estimated for women ages 20-24 and 25-34. In each case the elasticity of employment exceeds two, with much of the gain coming in increased participation. Women 16-34 thus display a greater degree of cyclical sensitivity than their male counterparts.

Table 2

Cyclical Response of Participation, Unemployment and Employment By Demographic Groups[a]

Demographic Groups	Employment Ratio (1)	Participation Rate (2)	Employment Rate (3)
MEN			
16-19	4.52	1.91	2.61
	(.68)	(.45)	(.51)
20-24	1.85	-.41	2.26
	(.66)	(.30)	(.59)
25-34	1.30	.04	1.26
	(.28)	(.09)	(.26)
35-44	1.06	.005	1.05
	(.19)	(.05)	(.18)
45-54	1.01	.002	1.01
	(.19)	(.07)	(.18)
55-64	1.07	-.04	1.11
	(.27)	(.24)	(.12)
65+	2.70	1.68	1.02
	(.71)	(.71)	(.08)
WOMEN			
16-19	4.41	2.53	1.88
	(.68)	(.62)	(.29)
20-24	2.22	.71	1.51
	(.68)	(.65)	(.19)
25-34	2.44	1.31	1.13
	(.49)	(.46)	(.18)
35-44	1.50	.55	.95
	(.30)	(.26)	(.14)
45-54	.96	.13	.83
	(.57)	(.56)	(.13)
55-64	-.06	-.79	.73
	(.59)	(.58)	(.09)
65+	-.91	-1.50	.59
	(1.25)	(1.25)	(.10)

Source: See Appendix for basic regressions; (estimates are based on quarterly data over the period 1950-1976).

[a]Cyclical response is defined as the sum of the coefficients on the lagged values of UP.

Women 35-54 are less responsive to changes in aggregate demand than younger women, but on average, the employment ratio elasticity is still greater than that estimated for men. The emergence of added worker behavior among older women sharply reduces the sensitivity of the group employment ratio to changes in unemployment, even to the point of producing a negative relationship. For example, for women over 65 we estimate that a 1 percent increase in aggregate demand leads to a 1.5 percent decline in participation which swamps the reduction in unemployment, leading to a net decline of -.91 percent in the proportion of women over 65 who are employed.

Demographic Contribution to Cyclical Variation

The results in Table 2 suggest that a large share of cyclical variations in the aggregate employment ratio is due to the responsiveness of teenagers and young women. The relative importance of the various age groups in accounting for cyclical movements in employment is examined in Table 3. In columns 2 and 3 we have used the population shares s_i together with estimated values of γ_{EN}^i to create a measure of each group's contribution to the change in the overall employment ratio. If $\Sigma s_i \gamma_{EN}^i$ is the predicted change in the overall employment ratio, the contribution of the i^{th} group is:

$$\Theta_i = \frac{s_i \gamma_{EN}^i}{\Sigma s_i \gamma_{EN}^i} \qquad (9)$$

The values of s_i, $s_i \gamma_{EN}^i$ and Θ_i are presented in columns 1, 2, and 3, respectively.

The calculations indicate that in aggregate employment is pro-cyclic. A 1 percent decline in the prime age male unemployment rate leads to a 1.5 percent increase in employment. A key result of the calculations is that young workers account for the larger part of the cyclical variations in employment.

Table 3

Population Shares and the Shares of Demographic Groups
In Short Run Variations in the Employment Ratio

Demographic Group	Population Share (s_i)	Weighted Elasticity ($s_i \gamma^I_{EN}$)	Employment Ratio Share ($s_i \gamma^I_{EN} / \Sigma_i s_i \gamma^I_{EN}$)
MEN	.474	.806	.524
16-19	.045	.203	.132
20-24	.045	.083	.054
25-34	.093	.120	.078
35-44	089	.094	.061
45-54	.081	.082	.053
55-64	.063	.067	.044
65+	.058	.157	.102
WOMEN	.526	.781	.476
16-19	.047	.207	.135
20-24	.055	.122	.079
25-34	.100	.244	.159
35-44	.096	.144	.094
45-54	.087	.084	.055
55-64	.068	-.004	-.003
65+	.073	-.006	-.042
TEENAGERS	.092	.410	.267
WOMEN 20-34	.155	.366	.238
ADULT MEN 25-64	.326	.363	.236
TOTAL	1.000	1.537	1.000

Note: γ^I_{EN} are taken from Table 2, column 1; the population shares are means for the sample period.

While teenagers comprise less than a tenth of the population, they account for more than a fourth of cyclical fluctuations. Teenagers and young women 20-34 represent only 25 percent of the adult population, yet they experience close to 50 percent of the cyclical variation in employment. Prime age males 25-64 are a large fraction of the population (32.6 percent) but account for less cyclical employment variation than teenagers who represent only 9 percent of the population. Because of the added worker effect among older women, the share in cyclical employment variations of women over 35 is 10.4 percent even though this group accounts for 32.4 percent of the population.

These results may be contrasted with similar calculations using the responsiveness of group unemployment rates (γ^i_{UR}). In that context, teenagers account for less than 20 percent of the cyclical variation compared to 27 percent when participation is also considered. Similar large differences are found for women 20-34. This calculation thus underscores our earlier observation that sole focus on the behavior of the unemployment rate may obscure important variations in market activity arising from changes in participation.

The analysis presented in Tables 2 and 3 demonstrates the importance of examining changes in participation in connection with related movements in employment and unemployment. The results suggest that teenagers and young women are particularly sensitive to short run movements in aggregate economic activity. These patterns are consistent with a significant discouraged worker effect. In contrast, we find that older women increase participation when aggregate demand decreases. These added worker effects are sufficiently large to nullify positive effects on group unemployment. The result is a decline in the employment ratio of this group. Given added worker effects among older women, and virtually

no responsiveness among prime age men, it is not surprising that the aggregate participation rate displays relatively little cyclical sensitivity. While aggregate movements in employment reflect primarily movements in unemployment, substantial variations in the composition of the labor force do occur over the business cycle.

Race and Marital Status

Variations in cyclical employment experience may be expected to depend on factors other than age and sex. Two such factors, race and marital status, are examined in Table 4, where the decompositions discussed above are performed for black workers, and separately for married and unmarried workers. The results suggest that these factors make a considerable difference. The employment experience of blacks is much more responsive to cyclical conditions that the experience of whites. A 1 percent reduction in the prime age male unemployment rate raises the proportion of black teenagers who are employed by well over 6 percent. Older blacks are not as responsive to cyclical conditions, but still exhibit substantially more sensitivity than the entire population. For men over 20, for example, the employment ratio rises by 2.2 percent for each 1 point decline in the prime age male unemployment rate.

Marital status appears to have a moderate effect on the cyclical behavior of men and women. The employment of single women, for example, is almost twice as responsive to cyclical changes as the employment of married women. While both groups display added worker behavior, the effect for single women is much smaller in absolute value, and is statistically insignificant. The negative response of participation to increases in demand partially mitigates declines in unemployment. The net effect is an employment elasticity less than one for both married and unmarried women.

Table 4

Cyclical Response of Participation, Unemployment and Employment by Race and Marital Status

Demographic Groups	Employment Ratio (1)	Participation Rate (2)	Unemployment Rate (3)
BLACKS			
Women			
16-19	6.97	3.48	3.49
	(1.79)	(1.66)	(.66)
20+	1.57	.10	1.47
	(.32)	(.24)	(.21)
Men			
16-19	6.18	2.03	4.15
	(1.12)	(.76)	(.82)
20+	2.23	-.14	2.37
	(.41)	(.16)	(.38)
MARITAL STATUS			
Women			
Married	.42	-.42	.84
	(.30)	(.20)	(.23)
Single	.80	-.25	1.05
	(.40)	(.37)	(.15)
Men			
Married	1.12	.27	.85
	(.34)	(.12)	(.32)
Single	2.23	-.13	2.36
	(.69)	(.52)	(.45)

Note: Based on regressions as described in the text. For blacks we used quarterly data covering the period 1954-1976. The equations for different marital status groups were estimated for the period 1949-1976 using annual data.

Source: Blacks - regular CPS published in Employment and Earnings by BLS. Marital status - data taken from Table B-1 Employment and Training Report of the President, 1977. The single category is a weighted average of the unmarried category and the widowed, separated and divorced group. For the unmarried group two adjustments to the data were made. First, for the period 1949-1966 the published data refer to persons 14 and over. Based on the reported changes in 1967 we assumed that all 14-15-year-olds were single. Using data from Table B-6 we subtracted 14-15-year-olds in the population and in the labor force. Since only 14-17-year-olds totals are published for 1949-1952 we estimated the number of 14-15 year olds, using their share of the 14-17 population in 1953-1957. The unemployment rate over this period was assumed to be unchanged, consistent with the reported changes in 1967. For the period 1972-1976 the institutional population was excluded. We estimated the institutional population in 1972 by extrapolating trends in total population 1967-1971 to get a predicted 1972 population including the institutional group. We then subtracted and added the difference to the reported population figure for each year, thus assuming a constant institutional population in 1972-1976.

Much more significant differences are observed in the behavior of single and married men. While single men exhibit added worker participation behavior, their unemployment rate is extremely sensitive to aggregate demand. The results imply that a 1 percent decline in the unemployment rate raises the single men's employment rate by over 2.3 percent, more than twice the impact on the married male rate. In all likelihood this is due to the relatively high proportion of single men who hold secondary jobs. The end result is that employment of single men is much more cyclically responsive than that of married men. A 1 point reduction in the unemployment rate raises the share of single men who are employed by 2.2 percent, compared to 1.1 percent for married men.

Section III: The Role of Aggregate Demand

The results in Section II indicate that aggregate demand as measured by the prime age male unemployment rate has a significant effect on the unemployment and participation rates of most demographic groups. The effect is especially pronounced in those groups which traditionally have the highest unemployment and lowest participation rates. For example, black teenagers, whose unemployment rate averaged over 40 percent during 1976, benefit most from increased aggregate demand. Their employment ratio rises by over 6 percent for each 1 point decline in the prime age male unemployment rate. Yet, many observers judge that the problems of high unemployment demographic groups, such as black teenagers, are largely the result of structural factors and are quite insensitive to aggregate demand. Perhaps the most widely cited statement of this view is found in Feldstein (1973). In this section we analyze the extent to which aggregate demand can reduce the unemployment of disadvantaged demographic groups.

Pessimism with respect to the efficacy of aggregate demand policy is buttressed by the observation that the unemployment rate of certain disadvantaged groups has remained high even during periods when the overall rate was reduced to quite low levels. In 1969, for example, the unemployment rate for male teenagers was 11.4 percent while the unemployment rate of black teenagers was over 23 percent. The analysis in this paper makes it clear that this may not reflect the impotence of aggregate demand. The results in Section II underscore the importance of examining unemployment fluctuations in the context of changes in employment and participation. It may be that the participation rate of high unemployment groups expands rapidly during periods of economic expansion, causing the group unemployment rate to remain at a fairly high level. On this view, the apparent sluggishness in unemployment arises because the hidden unemployment which is not measured during times when jobs are unavailable, simply becomes measurable. In order to examine the role of aggregate demand, we have used the equations described in the preceding section to estimate the unemployment rate which would have arisen in 1976 if the prime male unemployment had been driven to its 1969 level (1.3 percent).[10]

The results confirm the widespread view that unemployment rates would remain high, even in an expanding economy. For example, male teenagers would have had an unemployment rate of 11.5 percent at the end of 1976 even if the prime age male unemployment rate had been driven well below 2 percent. Likewise, black male teenagers would have had an unemployment rate of over 23 percent. Similar patterns hold for young women. It is significant that the predicted 1976 rates for male teenagers (both black and total) are virtually identical to the rates which actually prevailed in 1969. This result suggests that the empirical model provides a relatively consistent characterization of the cyclical experience of these groups.

Table 5

Simulated Unemployment Rates for 1976: 4
Assuming 1969 Levels of Aggregate Demand

Demographic Group	Actual Unemployment Rate 1976: 4 (1)	Estimated Unemployment Rates with 1969 Conditions	
		Full Participation Response (2)	No Participation Response (3)
MEN			
16-19	19.5	11.5	5.6
20-24	12.8	5.9	7.1
25-34	6.6	2.7	2.6
35-44	4.3	1.1	1.0
45-54	4.5	1.4	1.4
55-64	4.1	.7	.8
65+	4.7	1.6	-3.6
WOMEN			
16-19	18.6	12.8	5.1
20-24	12.4	7.8	5.6
25-34	8.6	5.1	1.1
35-44	6.2	3.3	1.6
45-54	5.2	2.7	2.3
55-64	5.0	2.8	5.2
65+	4.7	2.9	7.5
BLACKS			
MEN			
16-19	35.9	23.2	16.9
20+	11.3	4.0	4.5
WOMEN			
16-19	37.1	26.4	15.7
20+	11.3	6.8	6.5

Note: The estimated unemployment rates were calculated as follows:
Column 2: Actual unemployment rate in 1976: 4 - (γ^{I}_{UR} .∇)
when ∇= change in the prime age male unemployment rate had 1969 conditions prevailed in the previous 2 years.
Column 3: Same as column 2, except that γ^{I}_{EN} was substituted for γ^{I}_{UR}.

In order to examine the extent to which the resilience of high unemployment rates reflects surges in participation, we have recalculated the unemployment rates under the assumption that participation rates remain constant as aggregate demand expands. Unemployment rates calculated on this basis are shown in column 3 of Table 5. They indicate that with constant participation, increased aggregate demand could reduce unemployment rates of most demographic groups to very low levels. For example, increased employment would lead to a male teenage unemployment rate of 5.6 percent, comparable to the average unemployment rate of the entire population over the postwar period. The unemployment rate of young women would be driven down to similarly low levels. However, the unemployment rate of black teenagers would still remain at levels approaching 17 percent for young men, and 16 percent for young women. While clearly indicative of an important social problem, these calculations suggest a substantial welfare gain over the figures actually observed in 1976.

It is somewhat difficult to interpret the results. Were participation to remain constant, it is clear that aggregate demand could eliminate serious unemployment problems for most demographic groups. Participation, however, does not in fact remain constant. This would seem, if anything, to strengthen the case for expansionary policy, since the large surge in participation which inevitably accompanies cyclical expansion must indicate a chronic shortage of jobs, or at least that many persons are outside of the labor force because they expect little gain from further employment search. Encouraging the re-entrance of these individuals would seem to be a benefit of expansionary policy. It is clearly fallacious to argue that the potential entry of the hidden unemployed renders aggregate demand policy relatively impotent in easing demographic unemployment problems.

This finding has important implications for recent legislation designed to move the economy towards full employment. The Humphrey-Hawkins bill provides for mandatory unemployment targets both in aggregate and for demographic groups. Our analysis indicates that unemployment targets are misguided. Since unemployment rate movements can reflect either desirable or undesirable changes it is hardly sensible to design policy with a specific unemployment rate in mind. Rather, a much better means of serving the goal of full employment would be to phrase targets explicitly in terms of employment. Such a measure would avoid all of the ambiguities inherent in a CPS interpretation of the unemployment/nonparticipation distinction, as well as providing a sounder foundation for policy.

Section IV: Conclusions

This paper has confirmed the importance of participation in explaining cyclical fluctuations in employment. Its findings underscore recent criticisms of the unemployment rate as a sensible indicator of business cycle conditions. An additional finding is the extremely cyclical character of youth employment and unemployment. The results indicate that young people bear much of the burden of the economy's cyclical fluctuation. The results also strongly suggest that conventional analyses based on the unemployment rate have been very misleading in their portrayal of the potential role of aggregate demand policy in reducing the employment problems of disadvantaged subgroups. In fact, expansionary policies work very much to the benefit of high unemployment groups. Their substantial gain is not fully reflected in the unemployment rate only because of surges in participation. This finding suggests that aggregate demand must have a high place on any agenda for combatting the unemployment of disadvantaged groups. Young people are especially vulnerable to economic downturns and stand to gain the most from expansionary policies.

APPENDIX

This appendix presents estimates of the basic empirical model for the 14 demographic groups. The equations were estimated with an eight quarter lag on UP, but only the sum of the lag coefficients is presented. The data are available monthly in Employment and Earnings published by BLS.

Table A-1

Cyclical Response of Unemployment of Demographic Groups
(Standard Errors in Parentheses)

	CONS	UP	T^2 ($\times 10^2$)	$T67^2$ ($\times 10^2$)	$\bar{R}^2$	SEE	ρ
MEN							
16-19	-.034 (.022)	2.617 (.507)	-.074 (.026)	.005 (.068)	.904	.012	.767
20-24	-.009 (.025)	2.258 (.585)	-.003 (.030)	-.091 (.073)	.883	.010	.831
25-34	.001 (.011)	1.267 (.256)	.001 (.001)	-.040 (.030)	.892	.005	.791
35-44	.002 (.008)	1.053 (.181)	-.001 (.009)	-.006 (.020)	.893	.004	.806
45-54	-.005 (.007)	1.007 (.018)	.007 (.009)	-.010 (.020)	.873	.004	.754
55-64	-.006 (.005)	1.111 (.123)	.003 (.006)	-.013 (.016)	.900	.004	.692
65+	-.007 (.003)	1.021 (.084)	-.002 (.004)	-.002 (.010)	.811	.005	.433
WOMEN							
16-19	-.031 (.012)	1.876 (.289)	-.129 (.015)	.080 (.038)	.900	.012	.620
20-24	-.010 (.008)	1.515 (.200)	-.045 (.010)	-.029 (.024)	.905	.007	.620
25-34	-.016 (.008)	1.126 (.184)	-.018 (.009)	-.022 (.023)	.867	.005	.706
35-44	-.010 (.006)	.954 (.146)	-.015 (.007)	.001 (.018)	.815	.005	.652
45-54	-.013 (.005)	.826 (.128)	.002 (.006)	.025 (.016)	.811	.004	.655
55-64	-.018 (.004)	.734 (.091)	.015 (.005)	-.046 (.011)	.756	.005	.460
65+	-.009 (.004)	.588 (.098)	-.007 (.005)	-.025 (.013)	.586	.006	.330

*Indicates rounded off to zero.

Note: The coefficient under UP is the sum of the coefficients from an eight quarter, first degree polynomial distributed lag on UP. The dependent variable is ln (1-UR), when UR_i is the unemployment rate of the i^{th} group.

Table A-2

Cyclical Response of Participation of Demographic Groups
(Standard Errors in Parentheses)

	CONS	UP	T ($\times 10^2$)	T67 ($\times 10^2$)	$\bar{R}^2$	SEE	ρ
MEN							
16-19	-.401 (.019)	1.905 (.445)	-.271 (.024)	.661 (.061)	.898	.017	.621
20-24	-.132 (.013)	-.408 (.297)	-.064 (.016)	.053 (.041)	.756	.011	.642
25-34	-.031 (.004)	.042 (.097)	.009 (.005)	.069 (.015)	.860	.003	.747
35-44	-.021 (.002)	.005 (.051)	-.008 (.003)	-.042 (.007)	.901	.002	.496
45-54	-.037 (.003)	.002 (.074)	-.011 (.004)	-.097 (.010)	.961	.003	.584
55-64	-.132 (.012)	-.039 (.240)	-.029 (.019)	-.319 (.047)	.987	.005	.873
65+	-.696 (.034)	1.678 (.020)	-.821 (.051)	.201 (.126)	.994	.017	.830
WOMEN							
16-19	-.802 (.026)	2.530 (.620)	-.106 (.033)	.835 (.084)	.985	.015	.821
20-24	-.793 (.029)	.709 (.658)	.187 (.041)	.522 (.106)	.985	.015	.821
25-34	-1.051 (.020)	1.313 (.460)	.205 (.027)	.794 (.066)	.991	.015	.718
35-44	-.917 (.011)	.547 (.252)	.255 (.013)	.272 (.034)	.990	.011	.545
45-54	-.953 (.033)	.129 (.558)	.489 (.058)	-.407 (.144)	.990	.011	.920
55-64	-1.333 (.026)	-.793 (.583)	.706 (.035)	-.878 (.087)	.986	.018	.742
65+	-2.386 (.054)	-1.496 (1.248)	.099 (.072)	-.686 (.130)	.767	.041	.708

Note: The coefficient under UP is the sum of the coefficients from an eight quarter, first degree polynomial distributed lag on UP.

Footnotes

1
Feldstein (1973) has demonstrated the importance of demographic distinctions in analyzing unemployment. Other analyses, notably Mincer (1962, 1966) and Bowen and Finnegan (1969) have shown the extent of differences in participation behavior across demographic groups.

2
Ben Porath (1973) has shown that aggregate participation and individual labor supply equations are qualitatively very different. Thus, detailed study of micro-data is not likely to provide a firm basis for understanding aggregate participation. Moreover, micro-studies are typically unable to separate unemployment from non-participation.

3
They find that estimated youth unemployment is much less when teenagers respond to the questions (NLS) than it is when parents respond to the surveyor (CPS).

4
Distinguishing between this "casual search" and the "widespread discouragement" explanations of the high flow rates is the objective of Clark and Summers (1979).

5
Summers (1978) has shown that the employment ratio provides a better measure of labor market tightness than the unemployment rate in Phillips curve equations explaining wage inflation.

6
Note that as long as UR $<$ .1, it differs negligibly from ln (1-UR). Hence (3) can be interpreted as showing that the percentage change in employment is the sum of the change in the unemployment rate and the percentage change in the participation rate.

7
The results reported below are not sensitive to the form of the lag specification.

8
None of the conclusions are significantly altered when the employment ratio equation is estimated directly. Of course, the identity (3) is no longer satisfied.

9
In interpreting all the results in this section, it may be useful to note that a movement of 1 point in the prime-age male unemployment rate corresponds to a change of 1.25 points in the overall rate.

10
These predictions may depend on the functional form of the estimating equation. Feldstein and Wright (1976) found little difference in the response to changes in unemployment between periods of high and low unemployment.

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GPO 939-184